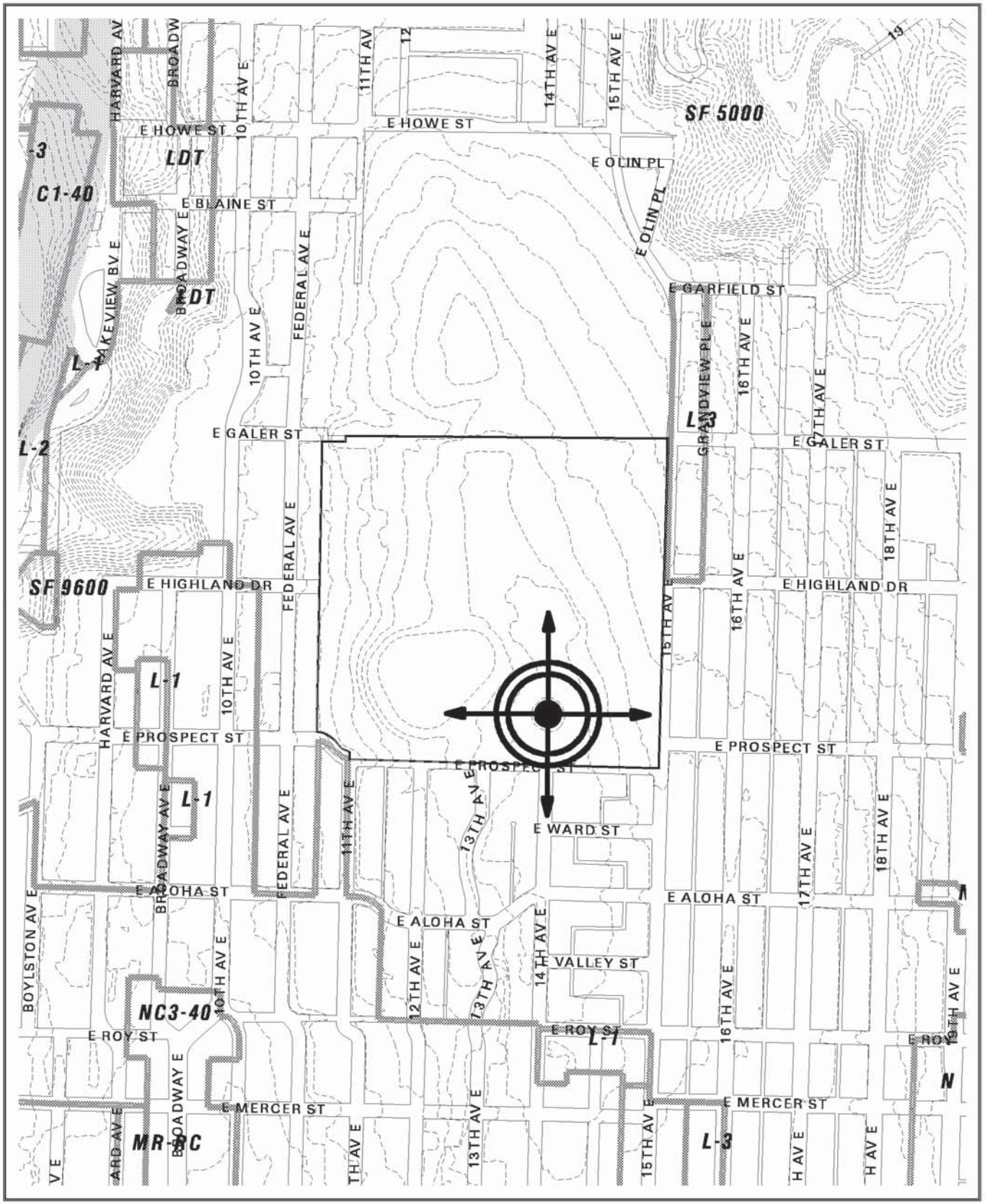
From: Marrell Livesay
To: Alspaugh, Pamela; Baker Carol; Chen Lisa; Elder Pat; Penttila Duane
Date: 2/12/02 9:43AM
Subject: Volunteer Park Water Tank

At last, I have the soil sampling report for Volunteer Standpipe (water tank).
In 1997 Kleinfelder Inc conducted a study of the areas around the water tank to the paved drive. In that area nearly the entire site has lead and/or arsenic above DOE cleanup levels. The Water Department has not taken any remedial action and is unsure when they may.

I don't find the contamination levels alarming however as always we should take a conservative approach in protecting users and workers. I suggest the following for the areas between the water tank and the paved drive.
1) Do not remove vegetation, do as little pruning as practicable.
2) Do not weed by hand or use any tool that will disturb the soil.
3) Use herbicides for weed control. (I know this may be contrary to other environmental policy but in this case it is better than hand or mechanical methods of vegetation control.)
4) Do not plant in this area.
5) Keep the area well mulched.
6) If utility/infrastructure work is required, the Safety Office and ESU are to be contacted before digging.

PS; The Water Department does plan to seismically upgrade the water tower. The last plan I heard called for the placement of a rubber gasket at the base of the tower. It seems likely that the landscaping around the water tank would be destroyed in the process. Again no time table for that project either. I thought you might want to know.

CC: Ishihara, Jim



VOLUNTEER PARK TOWER - SEPA

Freeways Ten Foot Contours Shoreline

0 600

FEET

SEATTLE TREE PRESERVATION INC.

Tom Von Schrader P.E.
SvR Design Company
1008 Western Avenue, Suite 301
Seattle, WA 98104 – 1025

Date: 6/16/00

Task:

To undertake an assessment of twenty-seven trees within Volunteer Park and make recommendations for tree management during planning and implementation of a drainage and pavement repair project. The work performed included a basic assessment of every tree. Additionally an in depth assessment of seven of the trees was made. These seven trees were selected by us based on their condition. Resistograph testing and inspection of the upper canopy portion of the trees was done as necessary. Below ground inspection included hand digging of test holes in the various landscape types beneath the trees. Also included is attendance by this consultant at public meetings where the projects scope and impacts will be discussed. Our role is to educate the public about the tree preservation and management efforts on the site.

Summary:

The trees investigated on site primarily consist of Horse Chestnut *Aesculus Hippocastanum L.* This *species* is also known as White(Horse) Chestnut, Common Horse Chestnut, Candle Tree, and Conker Tree. Crowns are generally of a dome form, and cast a dense shade. This tree produces showy white flowers in late spring. Horse Chestnut was cultivated in W Europe since 1500s. This species is a very tough street tree used world wide in difficult planting locations.

Some of the oldest known living Horse Chestnuts are located in the county of Surrey, England. They were planted in 1664 (Peter Barber & C.E. Lucas Phillips, *The Trees Around Us*, 1975) they are now 355 yrs old. This tree was introduced to North America between 1741 and 1746 when P. Collinson sent seeds to Wm. Bartram. The tree is common and is naturalized in some locales. Tree author Arthur Lee Jacobson has noted a Horse Chestnut in Volunteer Park, Seattle at being over 11' in circumference (Arthur Lee Jacobson, *Trees of Seattle*, 1989). Records for Washington State include 83'X14'6" located

in Walla Walla (1988) (Arthur Lee Jacobson, *North American Landscape Trees*, 1996). Young trees have been noted to have a 2' height per year growth rate.

The citizens of Seattle and a large number of tourists utilize Volunteer Park on a frequent and daily basis. These individuals use the area immediately around the trees concerned for walking; running, parking, cycling. The site is paved for road and walkway right of way with the original details specified in the park design, by the historically significant Olmstead Brothers Landscape Architects. The road surface has broken up, in places, and the walkway pavement has also been broken up by displacement as a result of the trees root development just below the paved surface. Investigation and excavation of the blocked storm drains revealed the buildup and development of fine-composted material and development of an extensive fibrous root system.

These trees are in Fair condition in general. Our investigation revealed a diseased tree, several trees of poor structural form and trees with decay present. Our experience with this species shows it to be quite resistant to decay forming strong boundaries around wounds.
The Horse Chestnut trees on site are in contact with the road, walkway pavement and curb details. Illustration of this situation can be seen in the enclosed sketches of the typical site conditions; see *Road – Tree Detail*, *Road and Walkway – Tree Detail*, *and Curb – Detail*. A small amount of excavation was undertaken on this site and further investigation by excavation with an air excavation tool is strongly recommended. Our investigations below ground, done by hand, revealed conflicts between the root system and paved surfaces as well as with car parking and resultant damage by cars to the trees.

Suggestions for completing the planned surface and utility improvements include utilizing methods and technology that ensure a minimum of below ground disturbance. These may include surface grinding or pavement recycling and, trenchless excavation to replace drains and conduit within the road. Ditching of the road or replacement of the curbs and pavement would likely cause root disturbance and damage to the trees resulting in both long-term and short-term problems. We strongly recommend that four exploratory holes be cut through the roadway pavement to reveal the section detail and extent of any root development beneath the pavement.

To replace the walkway in its present location it may be necessary to raise the final grade of the pavement to facilitate the repairs. It is critical that if possible, the roots under the walkway be not disturbed. Typical removal of the walkway surface using heavy equipment would cause disturbance and damage to the roots and would be extremely detrimental to the trees in the long-term. It is feasible to consider carefully removing the walkway and rebuilding it further away from the boles of the trees.

In general our observations support an approach to the infrastructure renovation that, while limiting damage to the trees, incorporates procedures which will enhance the health and, increase the longevity of the trees. Several trees should be removed and replaced as part of the project, these include: Tree # 3 a diseased tree and a definite removal, other trees being considered for removal and replacement are Tree # 8, Tree# 24 and Tree# 26. Several other trees (see Table of Trees) should, in our opinion be considered for removal over the next few years. These trees should be pruned and cabled in the near future to reduce the potential for branch failure.

A non-native Poplar tree adjacent Tree # 23 is also recommended for removal, as the tree and its parts have a high likelihood of failure given the species and the present condition of the tree.

13350 Lake City Way N.E. • Seattle, Washington 98125 • (206) 367-4048 • Fax (206) 367-0502
Member, International Society of Arboriculture and National Arborist Association

Volunteer Park Table of Trees

Tree	Height	Spread	DBH	Notes	Action
				North Section	
1	50	38	21.0"	Trunk and root crown wound, exposed roots. Pavement lifted.	Soils Resistograph
2*	44	41	24.9"	Damage to the root collar of the tree caused by parking vehicles, trunk damage. Compaction. Pavement lifted.	Soils Resistograph
3	66	56	35.5"	Girdling root. Severe cambium loss. Diseased tree, pathogen Armillaria (5' Circumference affected). Pavement lifted.	Replaced 2000 Removal
4*	56	52	30.1"	Root crown, trunk wound. Decay. Excessive end weight. Compaction. Pavement lifted.	Soils Prune
5	61	41	24.6"	Trunk wound / decay. Leaf color and size is poor in comparison to other trees in group. Soil cultivation work and testing for Armillaria recommended. Pavement lifted.	Soils Test for pathogen
6*	66	69	37.0"	Roots exposed, Tree has a lean, self corrected. Girdling root, flat south face. Compaction. Pavement lifted	Soils Resistograph Cable Prune
7	78	46	28.8"	Asymmetric Co-dominant trunk attachment. Girdling. Pavement lifted.	Soils Cable Prune
8*	75	69	35.6"	Major Asymmetry to west. Scaffold fail, tear out. Roots exposed. Excessive end weight. Compaction. Pavement lifted.	Soils Cable Resistograph Prune ?Removal? Replaced 2000
9	52	57	29.2"	Severe surface rooting, repeated injury. Torn scaffold wound. Excavation of blocked storm drain, fibrous root-mat present. Pavement lifted.	Soils
10*	40	39	22.6"	Asymmetric, shaded to the south by cedar. Severe compaction. Pavement breakup, roots exposed. Adjacent Canopy, light restriction.	Soils
11	56	65	33.3"	Decay, excavation (South). Scaffold end weight reduction, crack/split noted. Pavement breakup, root exposed, repeated injury. Poor taper at trunk base and may be cracking. Previous failure.	Soils Resistograph Cable Prune
12*	41	51	30.9"	Compaction. Soil remedial work, to reduce compaction. Roots exposed. Pavement lifted.	Soils
13	62	59	29.9"	Multiple attachments, poor structure. Tight co-dominant stems/branches. Crown, raised. Compaction. Pavement lifted. Crown restructure.	Soils Cable Prune
14*	49	44	24.4"	Severe vehicular basal injury / severe notch. Compaction. Adjacent Canopy, light restriction. Soil remedial work, to reduce compaction.	Soils ?Removal?
15	76	47	30.8"	Branch attachment concerns, north scaffold. Pavement lifted.	Soils Cable Prune
16*	63	70	38.4"	Severe truck damage- surface roots. Compaction. Roots severely exposed, pavement breakup. Scaffold branch defect.	Soils Cable Prune
17	63	54	34.4"	Northeast Scaffold, requires cable. Excavation, east of tree revealed extensive root development@2"Depth. Epicormic shoot growth, dense crown. Pavement lifted.	Soils Cable Prune

18*	60	50	25.3"	Asymmetric. Compaction. Roots under the pavement are exposed, have damage from pedestrian traffic. Pavement lifted.	Soils Cable Prune

Tree	Height	Spread	DBH	Notes	Action
				Center Section	
19	45	46	32.0"	Lean noted, moderate level of exposed roots. Scaffold branch removed, slow wound wood development.	Soils
20	72	46.5	30.3"	Co-dominant stem, bole. Pavement lifted.	Soils Cable Prune
21	60	78	32.8"	Truck damage- Clearance work required. Scaffolds at single level of attachment. Sap flow, west face of the trunk, necrotic wood. Scaffold branch rubbing northeast section of tree. Pavement lifted.	Soils Cable Prune
22	65	58	31.7"	South scaffold branch, noted hazard beam.	Soils Cable Prune
23	83	71	39.2"	Decay, localized slow spreading. Failure, scaffold branch. South scaffold, identified as hazard. Girdling root, 8"Dia west face, long term problem. Popular, East of tree- Removal *STRONGLY* recommended. Pavement lifted.	Soils Resistograph Cable Prune ?Remove?
				Loop / Entry Section	
24	78	83	34.0"	Decay / Breakout and Failure, multiple failures, breakout wounds extensive, wound wood ribs around cavities noted, decay walls have thin wall thickness. Scaffolds have had poor pruning and failure, decay present. Excessive end weight reduction on upper scaffolds. Root cut upon Northeast face of the tree.	Resistograph Removal
25	57	60	34.0"	Co-dominant attachment with a seam noted (Est.5.5'Length), multiple attachments. Crown has been subject dieback, foliage density is sparse on the north of the tree.	Soils
26	55	61	26.6"	Fungi *Laetiporus sulfurous*, saprophytic decay organism. Located on lower east bole, Maple *Acer*. Poor vigor, leafs loss and twig dieback evident. Significant lean, restricted root development	Resistograph Removal
27	40	53	27.0"	Trunk damage – 14' street clearance, Maple *Acer*. Crown deadwood, upper canopy.	Soils Prune

- * = These trees have all been damaged by vehicle parking, recommend traffic control bollards.
- Resistograph = Tree tested
- Soils = Soils work recommended
- Cable = Cobra Cable system recommended
- ?Removal? = Future removal should be considered

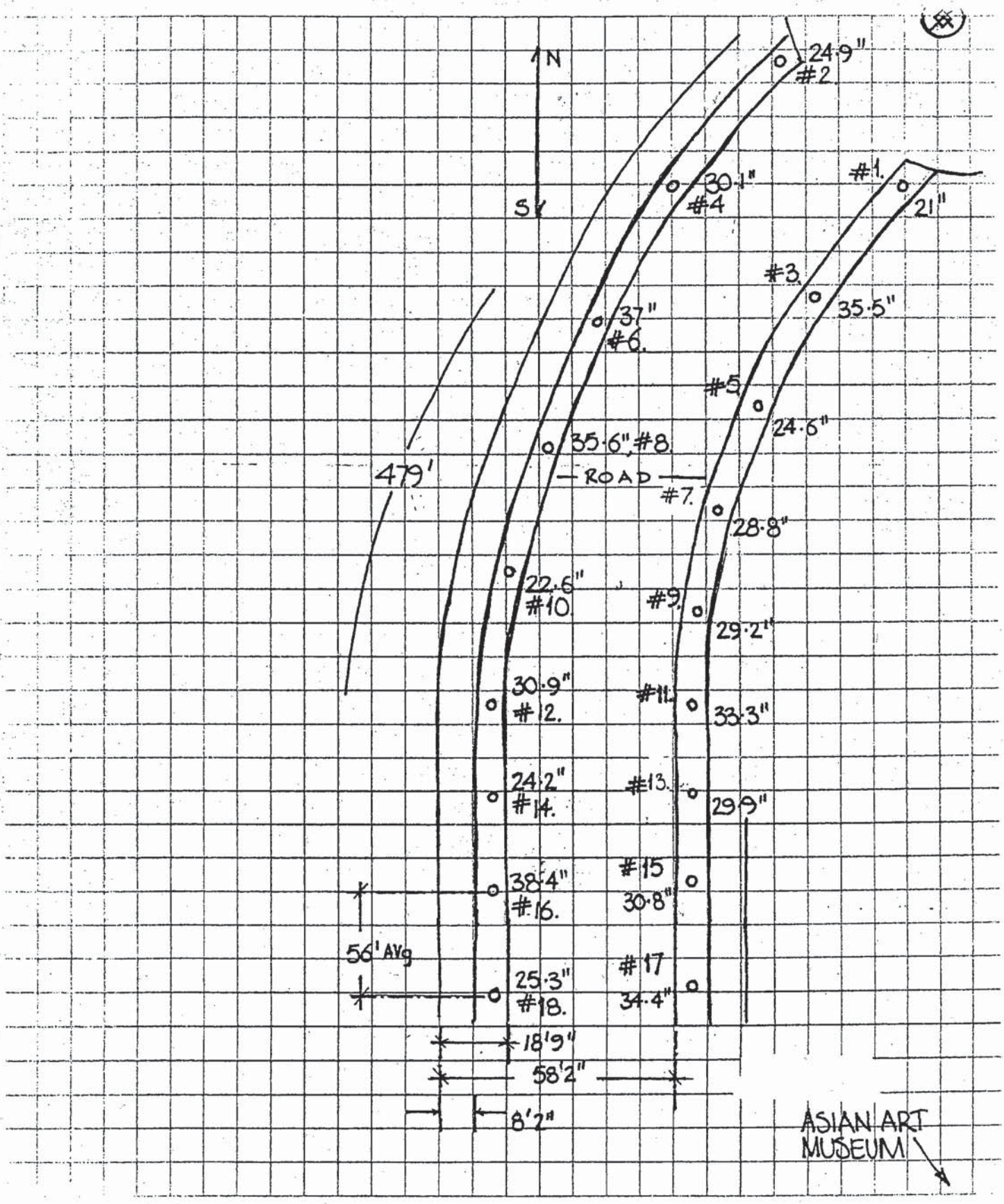
Project VOLUNTEER PARK Project No.

Subject SITE MAP

Date 4/27/00 By BAKER/THOMPSON

☐ Telephone Memo
☑ Field Notes
☐ Mtg. Notes
☐ To Be Typed
☐ _____

1 / 2



Project VOLUNTEER PARK Project No.

Subject SITE MAP

Date 4/27/00 By BAKER/THOMPSON

☐ Memorandum
☐ Telephone Memo
☒ Field Notes
☐ Mtg. Notes
☐ To Be Typed
☐

Sheet 2 of 2